

AMENDMENTS TO THE CLAIMS:

Please amend claims 1, 3, 4, 5, 14, 16, and 19 as indicated below. This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A flat panel X-ray detector which comprises:
an X-ray-charge conversion film converting incident X-rays into electric charges; and
a pair of electrodes disposed in contact with both surfaces of said X-ray-charge conversion film;
wherein said X-ray-charge conversion film has a laminate structure including a plurality of metal halide films laminated along a direction of a c-axis of a hexagonal crystal structure and differing in band gap from one another, [[and]] halogen atoms contained in said plurality of metal halide films are of the same kind among them, and said plurality of metal halide films have about the same lattice constant.
2. (Original) The flat panel X-ray detector according to claim 1, wherein at least one of said pair of electrodes is a conductive film which is lattice-matched with said metal halide film disposed neighboring thereon.
3. (Currently Amended) The flat panel X-ray detector according to claim 1, wherein said metal halide film comprises at least one metal halide selected from the group consisting of

metal iodide, metal bromide and metal chloride, said metal being selected from the group consisting of Pb, [[Hg,₂]] Sn, Bi, In, Ti, and Cd.

4. (Currently Amended) The flat panel X-ray detector according to claim 1, wherein said metal halide film comprises at least one metal halide selected from the group consisting of PbI₂, [[HgI₂,₂]] SnI₂, BiI₃, InI, InI₃, and [[CdT₂]] CdI₂, and TlI.

5. (Currently Amended) The flat panel X-ray detector according to claim 1, wherein said metal halide film comprises at least one metal halide selected from the group consisting of PbI₂, [[HgI₂,₂]] SnI₂, and BiI₃, InI, InI₃; said electrodes comprises a hexagonal crystal structure having a-axis lattice constant of 4.5 angstroms, a face-centered cubic structure having a-axis lattice constant of 6.45 angstroms or a body-centered cubic structure having a-axis lattice constant of 4.27 angstroms; and lattice mismatching between at least one of said electrodes and said metal halide film disposed neighboring thereon is 20% or less.

6. (Original) The flat panel X-ray detector according to claim 1, wherein said plurality of metal halide films comprise metal halides which are the same in kind with one another but differ in conductivity type from one another.

7. (Original) The flat panel X-ray detector according to claim 6, wherein said plurality of metal halide films comprise an n-type metal halide film and a p-type metal halide film.

8. (Original) The flat panel X-ray detector according to claim 7, wherein said plurality of metal halide films comprise a Bi-doped n-type PbI₂ film and an In-doped p-type PbI₂ film.

9. (Original) The flat panel X-ray detector according to claim 6, wherein said plurality of metal halide films comprise an n-type metal halide film, an i-type metal halide film and a p-type metal halide film.

10. (Original) The flat panel X-ray detector according to claim 9, wherein said plurality of metal halide films comprise a Bi-doped n-type PbI₂ film, an undoped PbI₂ film and an In-doped p-type PbI₂ film.

11. (Original) The flat panel X-ray detector according to claim 1, wherein said plurality of metal halide films comprise mixed crystalline metal halides which are the same in kind with one another but additionally contain different kinds of metal elements therein.

12. (Original) The flat panel X-ray detector according to claim 11, wherein said plurality of metal halide films comprise a Pb_xByI film, a PbI₂ film and a Pb_xIn_yI film.

13. (Original) The flat panel X-ray detector according to claim 1, wherein said plurality of metal halide films comprise various kinds of metal halides.

14. (Currently Amended) The flat panel X-ray detector according to claim 13, wherein said plurality of metal halide films comprise a BiI₃ film[[,]] and a PbI₂ film and an InI₃ film.

15. (Original) The flat panel X-ray detector according to claim 1, wherein at least one of said electrodes comprise a hexagonal crystal structure having a-axis which is approximately equivalent to (001), a face-centered cubic structure having a-axis which is approximately equivalent to (111) or a body-centered cubic structure having a-axis which is approximately equivalent to (110).

16. (Currently Amended) A flat panel X-ray detector which comprises:
an X-ray-charge conversion film converting incident X-rays into electric charge;
pixel electrodes formed on said X-ray-charge conversion film to correspond with each of pixels which are arranged in a form of array;
switching elements each electrically connected with each of said pixel electrodes;
signal lines each electrically connected with said switching element of each row;
scanning lines each electrically connected with said switching element of each column;
and
a common electrode which is disposed on one of the surfaces of said X-ray-charge conversion film, which is opposite to the surface where said pixel electrodes of said X-ray-charge conversion film are disposed;
wherein said X-ray-charge conversion film has a laminate structure comprising a plurality of metal halide films laminated along a direction of a c-axis of a hexagonal crystal structure and differing in band gap from one another, the halogen atoms of the metal halide films are of the same kind with one another, and said plurality of metal halide films have about the same lattice constant.

17. (Original) The flat panel X-ray detector according to claim 16, wherein said plurality of metal halide films comprise a Bi-doped n-type PbI₂ film, an undoped PbI₂ film and an In-doped p-type PbI₂ film.

18. (Original) The flat panel X-ray detector according to claim 16, wherein said plurality of metal halide films comprise a Pb_xBi_yI film, a PbI₂ film and a Pb_xIn_yI film.

19. (Currently Amended) The flat panel X-ray detector according to claim 16, wherein said plurality of metal halide films comprise a BiI₃ film[[,] and a PbI₂ film and an InI₂ film.

20. (Original) The flat panel X-ray detector according to claim 16, wherein at least one of said pair of electrodes is a conductive film which is lattice-matched with said metal halide film disposed neighboring thereon.